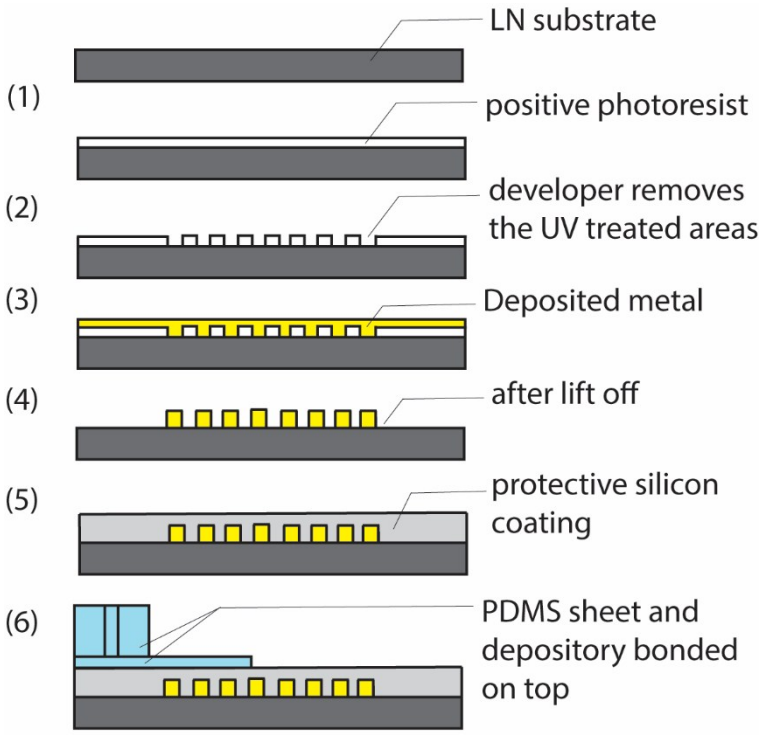
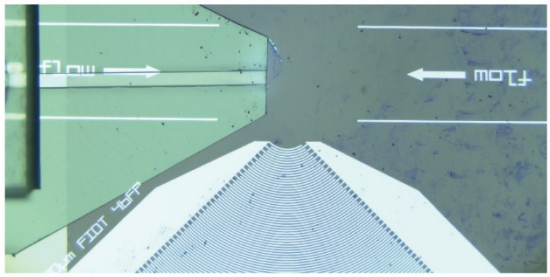
Journal Name

ARTICLE

Tailoring Surface Acoustic Wave Atomisation for Cryo-Electron Microscopy Sample Preparation - Supplementary Material

Dariush Ashtiani, Alex de Marco and Adrian Neild





Final nebuliser chip

Figure S1 – fabrication chart illustrating the steps taken to make the nebuliser. In step 1 the resist is is spin-coated and UV-treated. Then it gets developed in step 2 to prepare for deposition in step 3. To form the interdigitated finger-pairs on the LN substrate we do the lift off stage in acetone with the aid of ultrasound to remove everything other than the electrodes in step 4. For the chip to endure for longer a 250 nm layer of SiO_2 is then deposited in step 5 which makes the next step (bonding PDMS channel on the substrate) easier as well. The real image of the final product is shown at the bottom panel.

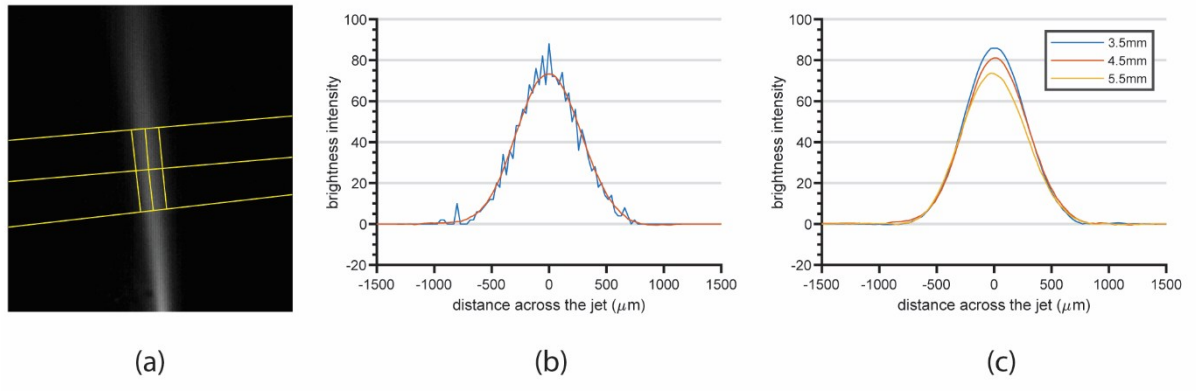


Figure S2 – (a) the aerosol stream that looks like a jet with the boundaries determined through image processing (from normal photography with light from above), (b) the intensity of brightness across the jet and smoothing it with "smoothdata" function of Matlab™ and (c) the intensity of brightness across the jet at three distances from substrate pivoted about the maximum point

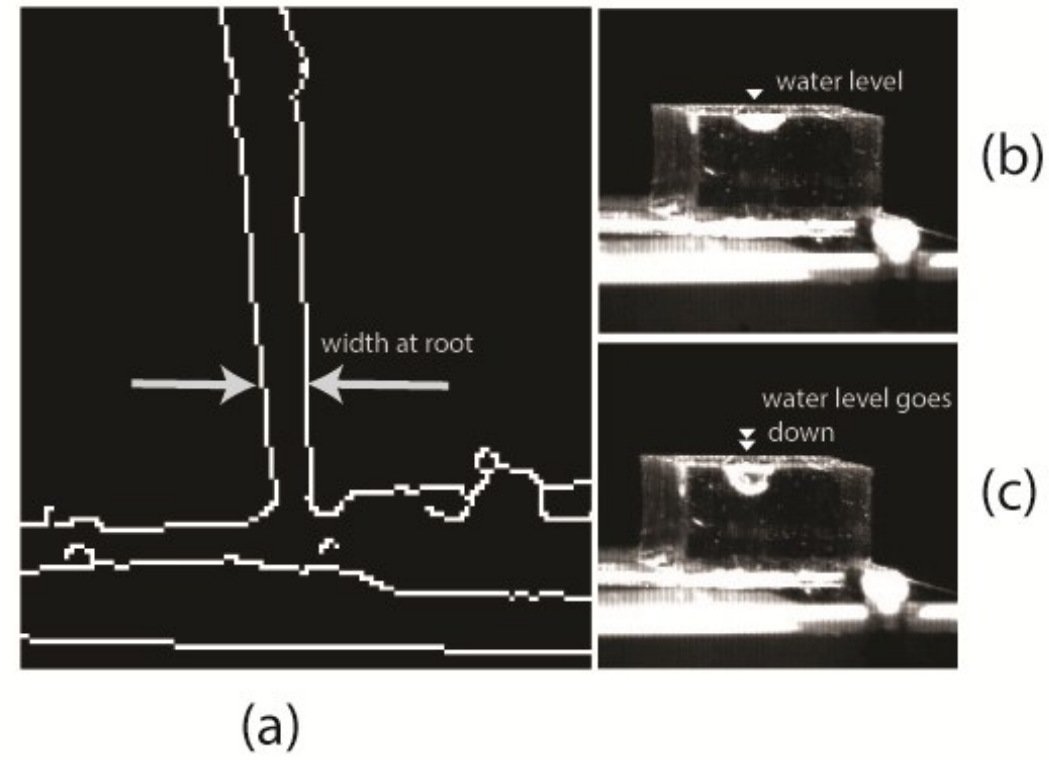


Figure S3 - (a) edge detection of the jet with Canny operator to find the width as close to the substrate as possible, (b) the water level and interface in the hole at initial time t_1 and (c) the same at time t_2 (these pictures are shown in normal photography with light from above to illustrate a better picture of what is happening)

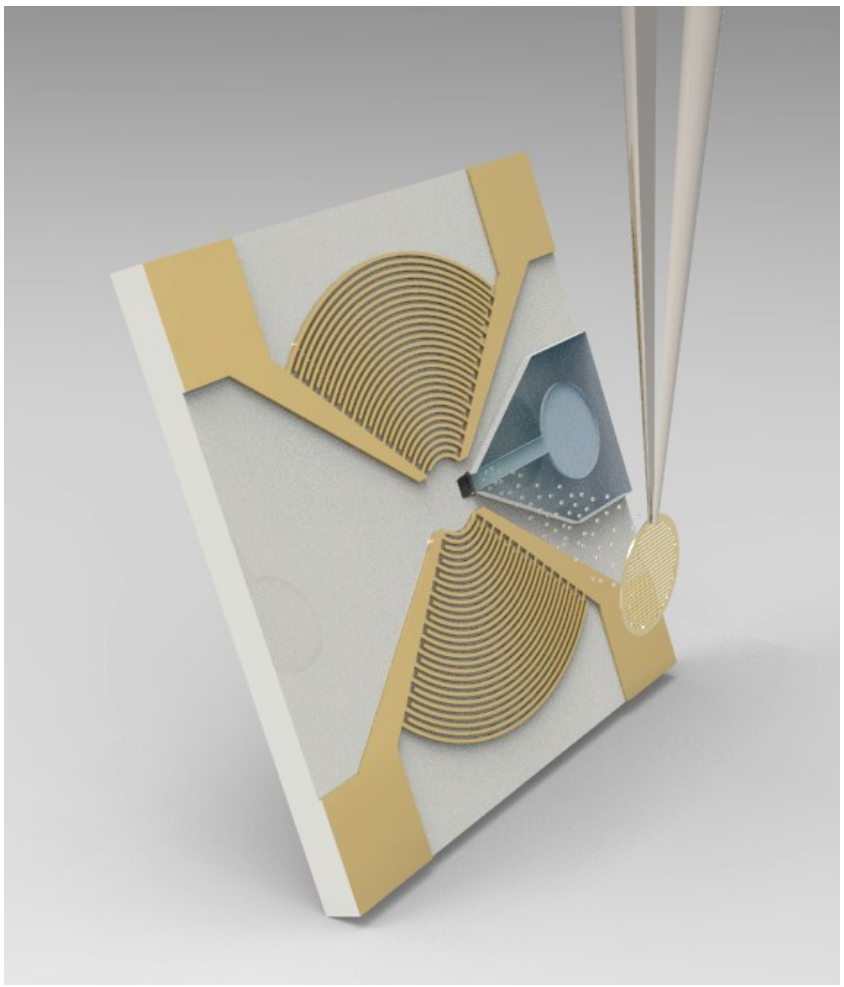


Figure S4 – rendered image of how the final nebuliser works together within the setup to deposit droplets on the TEM grids. Although the characterisation has been done on a horizontally positioned chip, the results should not vary for this configuration as the Bond number for the water meniscus is small enough which means that capillary forces are strongly dominant over gravity forces.